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LAKE SEVAN WATER TO IRRIGATE DESERT

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Lake Sevan has been a problem to the Scientific Research Institute of the Academy of Sciences USSR and the Academy of Sciences Armenian SSR for many years. Twenty-eight rivers empty into Lake Sevan while only one, the shallow Zanga, flows out of it. The large area covered by the lake suffers a loss of billions of cubic meters of moisture through evaporation. Clouds are continually forming over Lake Sevan. These clouds are blown to the west both summer and winter, across the mountain ranges to the Black Sea, where they cause useless rains. One hundred kilometers south of Sevan, however, in the Ararat Valley, there is no rain, and as a result this area has become a waterless desert.

Lake Sevan is one of the world's largest lakes found among high mountains. It was formed in a remote geologic period when lava flows obstructed the courses of mountain rivers which had been flowing into the Ararat Valley.

What would happen if the mountain water could again be made to flow down into the Ararat Valley?

Using this water it would be possible to irrigate more than 100,000 hectares of desert lands and change them into a continuous fruit orchard. Soviet scientists have calculated that if the level of the lake could be lowered gradually by 50 meters, both the area and Lake Sevan and the amount of moisture evaporated would be six times less. Then the new water balance could be ascertained. As formerly, 28 rivers would flow into Lake Sevan, but only an insignificant part of this moisture would be carried away by the wind to the sea. At the same time Lake Sevan would provide enough water to irrigate the whole Ararat Valley.

Lake Sevan would irrigate the desert lands of the Ararat Valley, the Zanga River would be fully watered; and seven large hydroelectric power plants would be arranged along its banks like steps, one after another: Ozernaya, Gyumushskaya, Kanakirekaya, Yerevanskaya, and others.

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The attempt to solve the Sevan-Zanga problems was begun before World War II. The largest Canal imeni Stalin was built and irrigated several tens of thousands of hectares of land. This land, formerly desert, today has on it orchards, kolkhoses, and sovkhoses which grow new kinds of wheat and cotton. Prior to World War II, two hydroelectric power plants of the Sevan cascade were built: The Yerevanskaya and, higher up, the Kanakirskaya. Their power is used by the industry of Yerevan.

During the past 10 years the water in Lake Sevan has been reduced. Each year it has been necessary to deepen the sources of the Zanga at Sevan in order to release part of the permanent store of water in the lake. Because the newly dug river bed is frequently blocked with silt, it has become necessary to have it cleaned regularly. If the water were to cease flowing out of the lake even for one day, the Yerevanskaya and Kanakirskaya Hydroelectric Power Plants would stop and in the summer the recently irrigated lands of the Ararat Valley would not receive water in time.

Intensive work went on even during the most difficult war years. Construction was begun on the head hydroelectric power plant of the Sevan-Zanga cascade, the Ozernaya. The Ozernaya, first step of the cascade, will not only produce power but primarily will regulate the daily reduction of the water in Lake Sevan. The water will then not flow into the Zanga, but into a huge reservoir. From there it will flow into a tunnel dug slantwise, and from the tunnel it will rush under heavy pressure into turbines mounted in a huge generator room. Then the water will flow out much lower than the level of the lake and will enter the old Zanga river bed. By opening or closing the inlet into the water reservoir, it will be possible to regulate the amount of water leaving Lake Sevan.

Twenty kilometers south of Lake Sevan the mountains thin out, and the Zanga flows in a basin rather than in a ravine. Several kilometers below this point, the mountains again close in and the river flows with difficulty through a ravine with perpendicular slopes. This outlet will be closed by a massive dam, and in the basin area the water will form a large artificial lake. Here the largest of the seven water-power stations, the Gyumushakaya is being built.

The creative work, designing and drafting projects for the power plants of the cascade, is being done in Yerevan. Both the Ozernaya and Gyumushakaya Power Plants were designed there. Now, designs for other power plants are being made.

One power plant will be situated between the Ozernaya, which is being completed, and the Gyumushakaya, which is in the process of construction. The next hydroelectric power plant will be below the Gyumushakaya. In the southwestern part of Yerevan, the first hydroelectric power plant to be constructed, the Yerevanges, has long been supplying current.

When the cascade is finished, the Lake Sevan water in its run to the Ararat Valley will provide energy for the seven hydroelectric power plants of the cascade and will then flow through the ten large canals and the irrigation channels of the valley through the currently unirrigated land. The water of Lake Sevan will furnish abundant power for Armenian industry; it will become the everlasting fountain for irrigating the fertile soil of the Ararat Valley.

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